

SEQ ID NO: 4	MGSWVQLITSVGVQQNHPGWTVAGQFQEKKRFTTEEVIYFQKKVSPVHLK
SEQ ID NO: 17	MGSWVQLITSVGVQQNHPGWTVAGQFQEKKRFTTEEVIYFQKKVSPVHLK
gi12408272	MGSWVQLITSVGVQQNHPGWTVAGQFQEKKRFTTEEVIYFQKKVSPVHLK
Y35897	-----
SEQ ID NO: 4	ILLTSDA WKRFVRVAELPREEADALYEALKNLTPYVAIEDKDMQQKEQQ
SEQ ID NO: 17	ILLTSDA WKRFVRVAELPREEADALYEALKNLTPYVAIEDKDMQQKEQQ
gi12408272	ILLTSDA WKRFVRVAELPREEADALYEALKNLTPYVAIEDKDMQQKEQQ
Y35897	-----MQQKEQQ *****
SEQ ID NO: 4	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
SEQ ID NO: 17	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
gi12408272	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL
Y35897	FREWFLKEFPQIRWKIQESIERLRVIANEIEKVRHGCVCIANVVSGTGIL *****
SEQ ID NO: 4	SVIGVMLAPFTAGLSL SITAAAGVGLGIASATAGIASSIVENTYTRSAELT
SEQ ID NO: 17	SVIGVMLAPFTAGLSL SITAAAGVGLGIASATAGIASSIVENTYTRSAELT
gi12408272	SVIGVMLAPFTAGLSL SITAAAGVGLGIASATAGIASSIVENTYTRSAELT
Y35897	SVIGVMLAPFTAGLSL SITAAAGVGLGIASATAGIASSIVENTYTRSAELT *****
SEQ ID NO: 4	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
SEQ ID NO: 17	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
gi12408272	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS
Y35897	ASRLTATSTDQLEALRDILHDI TPNVLSFALDFDEATKMIANDVHTLRRS *****

FIG. 1A

SEQ ID NO: 4
SEQ ID NO: 17
gi12408272
Y35897

KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL
KATVGRPLIAWRYVPINVVETLRLTRGAPTRIVRKVARNLGKATSGVLVVL

SEQ ID NO: 4
SEQ ID NO: 17
gi12408272
Y35897

DVNVLVQDSL DLHKGAKSESAE-----
DVNVLVQDSL DLHKGAKSESAESLRQWAQEELENINELTHIHQSLKAG
DVNVLVQDSL DLHKGAKSESAESLRQWAQEELENINELTHIHQSLKAG
DVNVLVQDSL DLHKGAKSESAELLRQWAQEELENINELTHIHQSLKAG

FIG. 1B

gi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

gi1304189

qi571466

SEO ID NO: 8

SEO ID NO: 19

qi1304189

qi571466

SEO ID NO: 8

SEO ID NO: 19

qi1304189

gi571466

SEQ ID NO: 8

SEQ ID NO: 19

qi1304189

qi571466

SEQ ID NO: 8

SEQ ID NO: 19

MASQIQKLLTTTNQDLLLLMQKGTMRKVRSKSWKKLRYFRLQDDGMTVVHGH
MASQIQKLLTTTNQDLLLLMQKGTMRKVRSKSWKKLRYFRLQDDGMTVVHGH
MASLQQDLTTDQDLLLLMQEGMPMRKVRSKSWKKLRYFRLQNDGMTVVHA
MASLQQDLTTDQDLLLLMQEGMPMRKVRSKSWKKLRYFRLQNDGMTVVHA

*** : * . *** : ***** : * **** : ***** : ***** *

RHLESISKPTFSISDVERIRKGQDSELLRYLEEFPLEQGTTIVFNRRP
RHLESISKPTFSISDVERIRKGQDSELLRYLEEFPLEQGTTIVFNRRP
RQARGSAKPSFISDVTIRNGHDSLESLAEELPLEQGTTIVFHGRRS
RQARGSAKPSFISDVTIRNGHDSLESLAEELPLEQGTTIVFHGRRS
*: . . : **: ***** ***: ***** ***: *****:***.

NLDLVANSVEEAQTWMRGLQLLDLVARMNYEQQLDQMLREWFQQADRNC
 NLDLVANSVEEAQTWMRGLQLLDLVARMNYEQQLDQMLREWFQQADRNC
 NLDLVANSVEEAQTWMRGLQLLDLVARMNYEQQLDQMLREWFQQADRNC
 NLDLMANSVEEAQIWMRGLQLLDLVLTSMDHQERLDQWLSDFQRGDKNC
 NLDLMANSVEEAQIWMRGLQLLDLVLTSMDHQERLDQWLSDFQRGDKNC
 NLDLMANSVEEAQIWMRGLQLLDLVLTSMDHQERLDQWLSDFQRGDKNC
 ***** : : : : : * : : : : * : : : : *

```
DSRMSFREAQRLLLLMNVEMDEEYAFSLFQEAADVQSNTLDSSEFVQFYK
DSRMSFREAQRLLLLMNVEMDEEYAFSLFQEAADVQSNTLDSSEFVQFYK
DGKMSFQEVQRLLHLNMVEMDQEYAFSLFQAADTSQSGTLEGEFFVQFYK
DGKMSFQEVQRLLHLNMVEMDQEYAFSLFQAADTSQSGTLEGEFFVQFYK
```

ALTKRTEIEELFFENFSSDKQKLTLLEFVDFLREEQKESDHSDDLAKLLID
ALTKRTEIEELFFENFSSDKQKLTLLEFVDFLREEQKESDHSDDLAKLLID
ALTKRAEVQELLFESFSADGQKLTLLEFLDLFLOEEQKERDCTSELALELID
ALTKRAEVQELLFESFSADGQKLTLLEFLDLFLOEEQKERDCTSELALELID

*****.: : : : : . * : : : : * : : : : *

FIG. 2A

gi1304189 gi571466
SEQ ID NO: 8
SEQ ID NO: 19

gi1304189 CPDLSALVVYLRTAPFCSTHSHKENYHIYDISSFSESKAKNLIREAGNEF
gi571466 CPDLSALVVYLRTAPFCSTHSHKENYHIYDISSFSESKAKNLIREAGNEF
SEQ ID NO: 8 CPALSSSLVIYLKSVSFRSFTSHSKEHYHFEISSFSETKAKRLIKEAGNEF
SEQ ID NO: 19 -----

gi1304189 VQHNAQLCRVYPSGLRTDSSNYPQEHWNVGCQMVAMNMQTAGSAMDIC
gi571466 VQHNAQLCRVYPSGLRTDSSNYPQEHWNVGCQMVAMNMQTAGSAMDIC
SEQ ID NO: 8 VQHNTRQLSRVYPSGLRTGSSIYNPQGY-----
SEQ ID NO: 19 -----

gi1304189 DGLFRQNGSGYVLKPEFLRDTQSSFNPMKPVSLYKAQILVVQVISGQRL
gi571466 DGLFRQNGSGYVLKPEFLRDTQSSFNPMKPVSLYKAQILVVQVISGQRL
SEQ ID NO: 8 -----
SEQ OD NO: 19 -----

gi1304189 PKVDKTKETTVDPLVRVELYGVPEDTKQQETSYVENNGINPYWGETFYF
gi571466 PKVDKTKETTVDPLVRVELYGVPEDTKQQETSYVENNGINPYWGETFYF
SEQ ID NO: 8 -----
SEQ ID NO: 19 -----

gi1304189 QIQVPELAMLRVVKDYSRTSRNNFIGQYTLPWTCMKHGYRHVSLLSKDG
gi571466 QIQVPELAMLRVVKDYSRTSRNNFIGQYTLPWTCMKHGYRHVSLLSKDG
SEQ ID NO: 8 -----
SEQ ID NO: 19 -----

FIG. 2C

gi1304189

gi1571466

SEQ ID NO: 8

SEQ ID NO: 19

TSLHPASHFVYTCMQEDLDMDPEP

TSLHPASIFVYTCMQEDLDMDPEP

FIG. 2D

SEQ ID NO: 21
gi434306
P60724

TNLIYHKNIPEWAHVDFIWGLDAPHRMYNEI I HLMQQEETNLSQGRCEAVL
TNLVFHESIPWEHLD F IWGLDAPWRLYNKI INLMRKYQ-----
PNLIYHKEIPFYNHLD F IWAMDAPQEVYNDIVSMISEDKK-----
.***:*.** : *:*****.:***.*** : : : :

FIG. 3B


```
SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

-----MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRR-----
-----MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
-----MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
-----MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
-----MQAKYSSTRDMLDDDDGDTTMSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
-----MSLSQASATTRHPEPRRTEHRAPSSSTWRPVALTLLTL
*****

-----TVFYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAWGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
CLVLLIGLAAALGLLFFQYQYQLSNTGQDTISQMEERLGNTSQELQSLQVQNIKLAGSLQHV
*****
.
*****

AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAG-----AHCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAGGYTRNMVPAASSESRLQLPHMGESAAAHRCSPCTEQWKWHGDNICYQ
AEKLCRELYNKAGGYTRNMVPAASSESRLQLPHMGESAAAHRCSPCTEQWKWHGDNICYQ
*****

FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
FYKDSKSWEDCKYFCLSENSTMLKINKQEDLEFAASQSYSEFFYSYWTGLLRPDSGKAWL
*****
```

FIG. 4A

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

SEQ ID NO: 27
Y05317
gi7110216
SEQ ID NO: 23
SEQ ID NO: 25
SEQ ID NO: 11

WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH
WMDGTPFTSELFHIIIDVTSPRSRDCVAIINGMIFSKDCKELKRCVCERRAGMVKPESLH

VPPE TLGEGD-----
VPPE TLGEGD-----
VPPE TLGEGD-----
VPPE TLGEGD-----
VPPE TLGEGDMHHHHHH
VPPE TLGEGD-----

FIG. 4B

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

VNPRALDFAETNYIYFADTTSFLIGRQKIDGTERETILKDDLDNVE-----
VNPRALDFAETNYIYFADTTSFLIGRQKIDGTERETILKDDLDNVEGIAVDWIGNNLYW
VNPRALDFAETNYIYFADTTSFLIGRQKIDGTERETILKDDLDNVEGIAVDWIGNNLYW
MNPRALDFAETGFIYFADTTSYLI GRQKIDGTERETILKDG IHNVEGVAVDWMDNLYW
:*****:*****:*****:***

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TNDGHRKTINVARLEKASQSRKTLLEGEMSHPRGIVVDPI NGWMYWTDWEEDIDDSVGR
TNDGHRKTINVARLEKASQSRKTLLEGEMSHPRGIVVDPI NGWMYWTDWEEDIDDSVGR
TDDGPKKTI SVARLEKAAQTRKTLIEGKMTHPRAIVVDPI NGWMYWTDWEEDPKDSRRGR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IEKAWMDGFNRQIFVTSK-MLWPNGLTLD FHTNTLYWCDAYYDHI EKVFNLGTHRKI VYS
IEKAWMDGFNRQIFVTSK-MLWPNGLTLD FHTNTLYWCDAYYDHI EKVFNLGTHRKI VYS
LERAWMDGSHRDI FVTSKTVLWPNGLSLDI PAGRLYWVDAFYDRI ETILLNGTDRKI VYE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GRELNHPFGLSHHGNYVFWTDYMN GSI FQLDLITS----EVTLLRHERPPLFGLQIYDPR
GRELNHPFGLSHHGNYVFWTDYMN GSI FQLDLITS----EVTLLRHERPPLFGLQIYDPR
GPELNHAFGLCHHGNYLFWTEYRSGSVYRLERGVGGAPPTVTL LRSEPP IFEIRMYDAQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KQQ-GDNMCRVNNGGCSTLCLAI PGGRVCACADNQLLDENGTTCTFNPGEALPHI CKAGE
KQQ-GDNMCRVNNGGCSTLCLAI PGGRVCACADNQLLDENGTTCTFNPGEALPHI CKAGE
QQQVGTNKRNVNNGCSSLCLATPGSRQCA CAEDQVLDADGVTCLANPSYVPPQCQPG E

FIG. 5C

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

FRCKNRHICIQARWKCDGDDCLDGSDEDSVNCFNHSCPDQFKCQNNRCIPKRWLCDGAN
FRCKNRHICIQARWKCDGDDCLDGSDEDSVNCFNHSCPDQFKCQNNRCIPKRWLCDGAN
FACANSRRCIQERWKCDGDNDCLDNDSEAPALCHQHTCPSDRFKCENNRCIPNRWLCDGDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCGSNEDESNOTCTARTCQVDQFSCNGRRCIPRAWLCDREDDCGDQTDEMASCEFFPTCEP
DCGSNEDESNOTCTARTCQVDQFSCNGRRCIPRAWLCDREDDCGDQTDEMASCEFFPTCEP
DCGSNEDESNAATCSARTCPPNQFSCASGRRCIPISWTCDLDDCGDRSDESASCAYPPTCFP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LTQFVCKSGRCISSKWHCDSDDDCGDGSDEVGCVHSCFDNQFRCSSGRRCIPGHWACDGDN
LTQFVCKSGRCISSKWHCDSDDDCGDGSDEVGCVHSCFDNQFRCSSGRRCIPGHWACDGDN
LTQFTCNNGRCININWRCDNDNDCCGDNDEAGCSHSCSSTQFKCNSGRRCIPEHWTCDGDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCGDFSDEAQINCTKEEIHSPAGCNGNEFQCHPDGNCVVDLWRCDEKDCEDGSDEKGCN
DCGDFSDEAQINCTKEEIHSPAGCNGNEFQCHPDGNCVVDLWRCDEKDCEDGSDEKGCN
DCGDYSDETHANCTNQATRPFGGCHTDEFQCRLDGLCIPLRWRCDGDTDCMDSSDEKSCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GTIRLCDHKTKFSCWSTGRINCINAWVCDGDDICEDQSDDEDDCDSFLCGPPKHPCANDTSV
GTIRLCDHKTKFSCWSTGRINCINAWVCDGDDICEDQSDDEDDCDSFLCGPPKHPCANDTSV
GVTHVCDPSVKFGCKDSARCISKAWVCDGDNDCEDNDSDENCESLACRPPSHPCANNTSV

FIG. 5D

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CLQPEKLCNGKKDCPDGSDGEGYLCDECSLNNGGCSNHCSSVVPGRGIVCSCPEGLQLNKDN
CLQPEKLCNGKKDCPDGSDGEGYLCDECSLNNGGCSNHCSSVVPGRGIVCSCPEGLQLNKDN
CLPPDKLCDGNDDCGDSDGEGELCDQCSLNNGGCSNHCSSVAPGEGIVCSCPLGMELGPDN

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KTCEIVDYCSNHLKCSQVCEQHKHTVKCSCYEGWKLDVDGESCTSDVPFEAFIIFSIRHE
KTCEIVDYCSNHLKCSQVCEQHKHTVKCSCYEGWKLDVDGESCTSDVPFEAFIIFSIRHE
HTCQIQSYCAKHLKCSQKCDQNKFSVKCSCYEGWVLEPDGESCRSLDPFKPFIIFSIRHE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IRRIDLHKRDYSLVLPGLRNTIALDFHFNQSLLYWTDVVEDRIYRGKLSGGSVAIEVV
IRRIDLHKRDYSLVLPGLRNTIALDFHFNQSLLYWTDVVEDRIYRGKLSGGSVAIEVV
IRRIDLHKGDYSLVLPGLRNTIALDFHLSQSAIYWTDVVEDKIYRGKLLDNGALTSFEVV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

VEHGLATPEGLTVDWIAGNIYWIDSNLDQIEVAKLDGSLRRTTLIAGAMEHPRAIALDPY
VEHGLATPEGLTVDWIAGNIYWIDSNLDQIEVAKLDGSLRRTTLIAGAMEHPRAIALDPY
IQYGLATPEGLAVDWIAGNIYWVESNLDQIEVAKLDGTLRRTTLIAGDIEHPRAIALDPRD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GILFWTDWDANFPRIEASMSGAGRTIYKDMKTGAWPNGLTVDHFEKRIVWTDARSDAI
GILFWTDWDANFPRIEASMSGAGRTIYKDMKTGAWPNGLTVDHFEKRIVWTDARSDAI
GILFWTDWDASLPRIEAAASMSGAGRTVHRETSGGGWPNGLTVDYLEKRILWIDARSDAI

FIG. 5E

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YSALYDGTNMIEIIRGHEYL SHPFAVSLYGSEVYWDWRTNTLSKANKWTGQNVSVIQKT
YSALYDGTNMIEIIRGHEYL SHPFAVSLYGSEVYWDWRTNTLSKANKWTGQNVSVIQKT
YSARYDGS GHMEVLRGHEFL SHPFAVTLYGGEVYWDWRTNTLAKANKWTGHNVTVVQRT

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SAQPFDLQIYHPSRQPQAPNPCAANDGKGPCSHMCLINHNRSAAACACPHLMKLSDDKKTC
SAQPFDLQIYHPSRQPQAPNPCAANDGKGPCSHMCLINHNRSAAACACPHLMKLSDDKKTC
NTQPFDLQVYHPSRQPMAPNCPCEANGGQGPCSHLCLINYNRTVSCACPHLMKLHKDNTTC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YEMKKFLLYARRSEIRGVDIDNPYFNFI TAF TVPDIDDVTVIDF DASEERLYWTDIKTQT
YEMKKFLLYARRSEIRGVDIDNPYFNFI TAF TVPDIDDVTVIDF DASEERLYWTDIKTQT
YEFKKFLLYARQMEIRGVDLDAPYNYIISFTVPDIDNVTVDYDAREQ RVYWSDVRTQA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IKRAFINGTGLETVISRDIQSI RGLAVDWVSRNLYWISSEFDE TQINVARLDGSLKTSII
IKRAFINGTGLETVISRDIQSI RGLAVDWVSRNLYWISSEFDE TQINVARLDGSLKTSII
IKRAFINGTGLETVISADLPNAHGLAVDWVSRNLFWTSYDYNKKQINVARLDG SFKNNAV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HGIDKPQCLAAHPVRGKLYWTDGNTINMANMDGNSKILFQNKQEPVGLSIDYVENKLYW
HGIDKPQCLAAHPVRGKLYWTDGNTINMANMDGNSKILFQNKQEPVGLSIDYVENKLYW
QGLEQPHGLVVHPLRGKLYWTDGDNISMANMDGNSR TLLFSGQKGPVGLAIDFPESKLYW

FIG. 5F

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

ISSNGTINRCNLDGNGLEVIESMKEELTKATALTIMDKKLWWADQNLAQLGTC SKRDGR
ISSNGTINRCNLDGNGLEVIESMKEELTKATALTIMDKKLWWADQNLAQLGTC SKRDGR
ISSGNHTINRCNLDGSGLEVIDAMRSQLGKATALAIMGDKLWWADQVSEKMGTC SKADGS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

NPTILRNKTSVVHMKVYDKEAQ---QGSNSCQLNNGGCSQLCLPTSETTRTCMCTVGYY
NPTILRNKTSVVHMKVYDKEAQ---QGSNSCQLNNGGCSQLCLPTSETTRTCMCTVGYY
GSVVLNRNSTTLVMHMKVYDESIQLDHKGTNPCSVNNGDCSQLCLPTSETTRSCMCTAGYS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LQKNRMSQCQIESFLMYSVHEGIRGIPLEPSDKMDALMPISGTSFAVGIDFHAENDTIYW
LQKNRMSQCQIESFLMYSVHEGIRGIPLEPSDKMDALMPISGTSFAVGIDFHAENDTIYW
LRSGQACEGVGSGFLLYSVHEGIRGIPLDPNDKSDALVPVSGTSLAVGIDFHAENDTIYW

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TDMGFNKISRAKRDQTWKEDIITNGLGRVEGIAVDWIAGNIYWTDHGFNLIEVARLNGSF
TDMGFNKISRAKRDQTWKEDIITNGLGRVEGIAVDWIAGNIYWTDHGFNLIEVARLNGSF
VDMGLSTISRAKRDQTWREDVVVTNGIGRVEGIAVDWIAGNIYWTDQGFVDIEVARLNGSF

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RYVVISQGLDQPRSI AVHPEKGLLFWTEWGQMPICIGKARLDGSEKVVLVSMGI AWPNGIS
RYVVISQGLDQPRSI AVHPEKGLLFWTEWGQMPICIGKARLDGSEKVVLVSMGI AWPNGIS
RYVVISQGLDKPRAITVHPEKGYLFWTEWGQYPRIERSRLDGTERRVVLNVVSI SWPNGIS

FIG. 5G

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

IDYEENKLYWCDA
TDKIERIDLETG
GNREMLVLSGS
NVDMFSAVFGA
IYWSDRAHANG
IDYEENKLYWCDA
TDKIERIDLETG
GNREMLVLSGS
NVDMFSAVFGA
IYWSDRAHANG
VDYQDGKLYWCDA
TDKIERIDLETG
ENREVLSSNNM
DMFSSVSVFED
FIYWSDRTHANG

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SVRRGHKNDATET
ITMRTGLGVNL
KEVKIFNRVRE
KGTNVCARDNG
GCKQLCLYRGN
SRRSVRRGHKNDATET
ITMRTGLGVNL
KEVKIFNRVRE
KGTNVCARDNG
GCKQLCLYRGN
SRRSIKRGSKDNATDS
VPLRTGIGVQL
KDIKVFNRDRQ
KGTNVCANGGC
QQQLCLYRGRG
QR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TCACAHGYLAED
GVTCLRHGYLL
YSGRTILKSIH
LSDETNLNSPI
RYPENPRYFKN
VIA TCACAHGYLAED
GVTCLRHGYLL
YSGRTILKSIH
LSDETNLNSPI
RYPENPRYFKN
VIA ACACAHGMLAED
GASCREYAGYL
LYSERTILKSI
HLSDERNLNAP
VQPFEDPEHMK
NVIA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LAFDYNQRRKG--
TNRIFYSDAHF
GNIQLIKDNWE
DRQVIVENVGS
VEGLAYHRAWDT
LY LAFDYNQRRKG--
TNRIFYSDAHF
GNIQLIKDNWE
DRQVIVENVGS
VEGLAYHRAWDT
LY LAFDYRAGTSP
GTPNRIFFSDI
HFGNIQQINDD
GSRRTITIVEN
VGSVEGLAYHR
GWDTLY

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

WTSSTTSSITR
HTVDQTRPGAF
DREAVITMSEDD
HHPVLALDECQ
NLMFWTNWNEQ
HPSI WTSSTTSSITR
HTVDQTRPGAF
DREAVITMSEDD
HHPVLALDECQ
NLMFWTNWNEQ
HPSI WTSYTTSTI
TRHTVDQTRPG
AFERETVITMS
GDDHPRAFLDE
CQNLFWTNWNE
QHPSI

FIG. 5H

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

MRSTLTGKNAQVVVSTDILTTPNGLTIDYRAEKLYFSDGLGKIERCEYDGSQRHVIVKSG
MRSTLTGKNAQVVVSTDILTTPNGLTIDYRAEKLYFSDGLGKIERCEYDGSQRHVIVKSG
MRAALSGANVLTLEKDIRTPNGLAIDHRAEKLYFSDATLIDKIERCEYDGSHRVYVILKSE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PGTFLSLAVYDNYIFWSDWGRRAILRSNKYTGDTKILRSDIPHQPMGIIAVANDTNSCE
PGTFLSLAVYDNYIFWSDWGRRAILRSNKYTGDTKILRSDIPHQPMGIIAVANDTNSCE
PVHPFGLAVYGEHIFWTDWVRRVQRANKHVGSNMKLLRVDIPQQPMGIIAVANDTNSCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LSPCALLNGGCHDLCLLTPNGRVNCSRGDRILLEDRNRCVTKNSSCNAYSEFECNGGECI
LSPCALLNGGCHDLCLLTPNGRVNCSRGDRILLEDRNRCVTKNSSCNAYSEFECNGGECI
LSPCRINNGGCQDLCLLTHQHVNCSRGGRILLQDDLTICRAVNSSCRAQDEFECANGECI

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DYQLTCDGIPHCCKDSDEKLLLYCENRSCRRGFKPCYNRRRCIPHGKLCDEGDCGDSDEL
DYQLTCDGIPHCCKDSDEKLLLYCENRSCRRGFKPCYNRRRCIPHGKLCDEGDCGDSDEL
NFSLTCDGVPHCKDKSDEKPSYCNRRCKKTFRQCSNRCVSNMLWCNGADDCGDSDEI

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DCKVSTCATVEFRCADGTCTIPRSARCNQNICADASDEKNCNNTDCTHFYKLGVKTTGFI
DCKVSTCATVEFRCADGTCTIPRSARCNQNICADASDEKNCNNTDCTHFYKLGVKTTGFI
PCNKTACGVGEFRCDGTCTIGNSSRCNQFVDCEDASDEMNCSATDCSSYFRLGVKGVLFQ

FIG. 5I

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RCNSTSLCVLPTWI CDGSND CGDYSDELKCPVQNKHKKEENYFSCPSGRCIILNTWICDGQ
RCNSTSLCVLPTWI CDGSND CGDYSDELKCPVQNKHKKEENYFSCPSGRCIILNTWICDGQ
PCERTSLCYAPSWVCDGANDCGDYSDERDCPGVKRPRCPLNYFACPSGRCI PMSWTCDKE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KDCEDGRDEFHCDSSCSWNQFACSAQKCI SKHWICDGEDDCGDLDESISCGAITCAAD
KDCEDGRDEFHCDSSCSWNQFACSAQKCI SKHWICDGEDDCGDLDESISCGAITCAAD
DDCEHGEDETHCNKFCSEAQFECQNHRCISKQWLCDSGDDCGDGSDE-AAHCEGKTCGPS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

MFSCQGSRA CVPRHWL CDGERDCPDGDELSTAGCAPNNTCDENAFMCHNKVCIPKQFVC
MFSCQGSRA CVPRHWL CDGERDCPDGDELSTAGCAPNNTCDENAFMCHNKVCIPKQFVC
SFSCPGTHVCVPERWL CDGDKDCADGADESIAAGCLYNSTCDDREFM CQNRQCI PKHFVC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DHDDDCGDSDESPQCGYRQCGTEEFSCADGRCLLNTQWQCDGDFDCPDHSDEAPLNPKC
DHDDDCGDSDESPQCGYRQCGTEEFSCADGRCLLNTQWQCDGDFDCPDHSDEAPLNPKC
DHDRDCADGSDSEPECEYPTCGPSEFRFCANGRCLSSRQWEC DGENDCHDQSD EAPKNPHC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KSAEQSCN-SSFFMCKNGRCIPSGGLCDNKDDCGDGSDE RNCHINECLSKKVS GCSQDCQ
KSAEQSCN-SSFFMCKNGRCIPSGGLCDNKDDCGDGSDE RNCHINECLSKKVS GCSQDCQ
TSPEHKCNASSQFLCSSGRCAEALLCNGQDDCGDSSDERGCHINECLSRKLSGCSQDCE

FIG. 5J

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DLPVSYKCKWPGFQLKDDGKTCVDIDECSSGFFPCSQQCINTYGYKCLCTDGYEIQPDN
DLPVSYKCKWPGFQLKDDGKTCVDIDECSSGFFPCSQQCINTYGYKCLCTDGYEIQPDN
DLKIGFKRCRCPGFRLLKDDGRTCADVDECSTTFPCSQRCINTHGSYKCLCVEGYAPRGG

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PNGCKSLDDEEPFLILADHHEIRKISTDGSNYTLLKQGLNNVIAIDFDYREEFIYWIDSS
PNGCKSLDDEEPFLILADHHEIRKISTDGSNYTLLKQGLNNVIAIDFDYREEFIYWIDSS
PHSCKAVTDEEPFLIFANRYYLRLKLNLDGSNYTLLKQGLNNAVALDFDYREQMIYWTDTV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RPNGSRINRMCLNGSDIKVVHNTAVPN--ALAVDWIGKNLYWSDTEKRIIEVSKLNGLYP
RPNGSRINRMCLNGSDIKVVHNTAVPN--ALAVDWIGKNLYWSDTEKRIIEVSKLNGLYP
T-QGSMIRRMHLNGSNVQVLHRTGLSNPDGLAVDWVGGNLYWCDKGRDTIEVSKLNGAYR

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TILVSKRLKFPRDLSLDPQAGLYWIDCCEYPHIGRVGMDGTNQSVVIETKISRPMALTI
TILVSKRLKFPRDLSLDPQAGLYWIDCCEYPHIGRVGMDGTNQSVVIETKISRPMALTI
TVLVSSGLREPRALVVDVQNGLYWTDWGDHSLIGRIGMDGSSRSVIVDTKITWPNGLTTL

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DYVNRRLYWAD--ENHIEFSNMDGSHRHKVPNQDIPGVIALTLFEDIYWTDGKTKSLSR
DYVNRRLYWAD--ENHIEFSNMDGSHRHKVPNQDIPGVIALTLFEDIYWTDGKTKSLSR
DYVTERIYWADAREDYIEFASLDGSNRHVLSQDIPHIFALTLEFEDYVYVWTDWETKSINR

FIG. 5K

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

AHKTSADRLSLIYSHAITDIQVYHSYRQPDVSKHLCMINNNGGCSHLCLLAPGKTHTCA
AHKTSADRLSLIYSHAITDIQVYHSYRQPDVSKHLCMINNNGGCSHLCLLAPGKTHTCA
AHKTTGTNKTLLISTLHRPMDLHVHFHALRQPDVPHPCVKVNNNGGCSNLCLLSPGGGHKCA

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CPTNFYLAADNRTCLSNCTASQFRCKTDKCIFFWWKCDTVDDCGDGSDEPDDCPEFRCQP
CPTNFYLAADNRTCLSNCTASQFRCKTDKCIFFWWKCDTVDDCGDGSDEPDDCPEFRCQP
CPTNFYLGSDGRTCVSNCTASQFVCKNDKCIFFWWKCDTEDDCGDHSDPEPDDCPEFKCRP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

GRFQCGTGLCALPAFICDGENDCGNSDELNCDTHVCLSGQFKCTKNQKCI PVNLRCNGQ
GRFQCGTGLCALPAFICDGENDCGNSDELNCDTHVCLSGQFKCTKNQKCI PVNLRCNGQ
GQFQCGSTGICTNPAFICDGDNDCCQDSDNDEANCDIHVCLPSQFKCTNTNRCIPGIFRCNGQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DDCGDEEDERDCPENSCSPDYFQCKTTKHCI SKLWVCDEDPDCADASDE -ANCDKKTGCP
DDCGDEEDERDCPENSCSPDYFQCKTTKHCI SKLWVCDEDPDCADASDE -ANCDKKTGCP
DNCGDGEDERDCPEVTCAPNQFQCSITKRCI PRVWVCDRDNDVDGSDPEPANCTQMTGCV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HEFQCKNNN-CIPDHWRCDSQNDSDNSDEENCKPQTCTLKDFLCANGDCVSSRFWCDGD
HEFQCKNNN-CIPDHWRCDSQNDSDNSDEENCKPQTCTLKDFLCANGDCVSSRFWCDGD
DEFRCCKDSGRICIPARWKCDGEDDCGDGSDPEPKEE-----CD--

FIG. 5L

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

FDCADGSDERNCTETCSKQDFRCSNGQCIIPAKWKCDGHEDCKYGEDEKSCPEASPTCSSR
FDCADGSDERNCTETCSKQDFRCSNGQCIIPAKWKCDGHEDCKYGEDEKSCPEASPTCSSR
-----ERTCEPYQFRCKNNRCVPGRWQCDYDNDCGDNDSEESCTPRP--CSES

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

EYICASDGCISASLKCNGEYDCADGSDMDCVTECKEDQFRCKNKAHCIPIRWLCDGIHD
EYICASDGCISASLKCNGEYDCADGSDMDCVTECKEDQFRCKNKAHCIPIRWLCDGIHD
EFSCANGRCIAGRWKCDGDHDCADGSDCKDCTPRCDMDQFQCK-SGHCIPLRWRCADAD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

CVDGSDDEENCERGNI CRADEFLCNNSLCKLHFWVCDGEDDCGDNDSDEAPDMCVKFLCPS
CVDGSDDEENCERGNI CRADEFLCNNSLCKLHFWVCDGEDDCGDNDSDEAPDMCVKFLCPS
CMDGSDDEEACGTGVRTCPLDEFQCNNTLCKPLAWKCDGEDDCGDNSDENPEECARFVCP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TRPHRCRNNRI CLQSEQMNGIDECGDNDSDEHCGGKLTYYKARPCCKDEFACSNKKCIIPM
TRPHRCRNNRI CLQSEQMNGIDECGDNDSDEHCGGKLTYYKARPCCKDEFACSNKKCIIPM
NRPFRCNDRVCLWI GRQCDGTDNCGDGTDEEDCEPPTAHTTHCKDKKEFLCRNQRCLESS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

DLQCDRLDDCGDGSDEQGCRIAPTEYTCEDNVNPGDDAYCNQIKTSVFCRCKPGFQRNM
DLQCDRLDDCGDGSDEQGCRIAPTEYTCEDNVNPGDDAYCNQIKTSVFCRCKPGFQRNM
SLRCNMFDDCGDGSDEEDCSIDPKLTSCATNASICGDEARCVRTEKAAAYCACRSGFHTVP

FIG. 5M

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

KNRQCEDLNECLVFGTCSHQINVEGSYKVCVDQNFQERNNTCIAEGSEDQVLYIANDTD
KNRQCEDLNECLVFGTCSHQINVEGSYKVCVDQNFQERNNTCIAEGSEDQVLYIANDTD
GQPGCQDINECLRFGTCSQLCNCNTKGGHLCSCARNFMKTHNTCKAEGSEYQVLYIADDNE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

ILGFIYPFNYSGDHQQISHIEHNSRITGMDVYYQRDMIIWSTQFNPGGIFYKRIH-----
ILGFIYPFNYSGDHQQISHIEHNSRITGMDVYYQRDMIIWSTQFNPGGIFYKRIH-----
IR-SLFPGHPHSAYEQAQFQGDSEVRIDAMDVHVVKAGRVIW-TNWHTGTISYRSLPPAAP

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

---GREKRQANS---LICPEFKRPRDIAVDWVAGNIYWTDSRHMWFSYTTHWTSRLY
---GREKRQANS---LICPEFKRPRDIAVDWVAGNIYWTDSRHMWFSYTTHWTSRLY
TTSNRHRRQIDRGVTHLNI SGLKMPRGIAIDWVAGNVYWTDSG-----RD

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

SINVGQLNGPNC'TRLLTNMAGEPYAIAVNPKRGMWYWTVVGDSHSHIEEAAMDGTLRRILV
SINVGQLNGPNC'TRLLTNMAGEPYAIAVNPKRGMWYWTVVGDSHSHIEEAAMDGTLRRILV
VIEVAQMKGENRKTLSGMIDEPHAI VVDPLRGTMYSWSDWGNHHPKIEAAMDGTLRETIV

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

QKNLQRP'TGLAVDYFSERIYWADFELSIIGSVLYDGSNSVSVSSKQGLLHPHRIDIFED
QKNLQRP'TGLAVDYFSERIYWADFELSIIGSVLYDGSNSVSVSSKQGLLHPHRIDIFED
QDNIQWPTGLAVDYHNERLYWADAKLSVIGSIRLNGTDP IVAADSKRGLSHPFSDVFD

FIG. 5N

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

YIYG-AGPKNGVFRVQKFGHGSVEYIALNIDKTGVLISHRYKQLDLPNPCLDLACEFLC
YIYG-AGPKNGVFRVQKFGHGSVEYIALNIDKTGVLISHRYKQLDLPNPCLDLACEFLC
YIYGTVYINNRFKIHKFGHSPVLNLTGGLSHASDVVLYHQHKQPEVTNPCDRKKCEWLC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

LLNPSGATCVCPEGKYLINGTCN-----DDSLDDSKLTCENGGRCILNEKGDRLC
LLNPSGATCVCPEGKYLINGTCN-----DDSLDDSKLTCENGGRCILNEKGDRLC
LLSPSGPVCTCPNGKRLDNGTCVPVPSPPTPPDAPRPGTCNLQCFNGGSCFLNARRQPKC

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

HCWPSYSGERCEVNHCSNYCQNGGTCVPSVLGRPTCSALGFTGPNCGKTVCEDFCQNGG
HCWPSYSGERCEVNHCSNYCQNGGTCVPSVLGRPTCSALGFTGPNCGKTVCEDFCQNGG
RCQPRYTGDKCELDQCWEHCRNGGTCAASP SGMPTCRCPGTGTPKCTQQVCAGYCANNS

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

TCIVTAGNQPYCHCQPEYTGDRQCYYVCHHYCVNSECTIGDDGSLCVCPTRYEGPKCE
TCIVTAGNQPYCHCQPEYTGDRQCYYVCHHYCVNSECTIGDDGSXECVCPTRYEGPKCE
TCTVNQGNQPQCRCLPGFLGDRQCQYRQCSGYCENFGTCQMAADGSRQCRCTAYFEGSRCE

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

VDKCVRCHGGHCIINKDSEDFCNCCTNGKIASCQLCDGYCYNGGTCQLDPETNVPVCLC
VDKCVRCHGGHCIINKDSEDFCNCCTNGKIASCQLCDGYCYNGGTCQLDPETNVPVCLC
VNKCSRCLGACVVKQSGDVTNCNTDGRVAPSLTLCVGHCSNGGSCTMN-SKMMPECQC

FIG. 50

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

STNWSGTQCERPAPKSSKSDHISTRSAIIVPLVLLVTLITTLVIGLVLCRKRRTKTIR
STNWSGTQCERPAPKSSKSDHISTRSAIIVPLVLLVTLITTLVIGLVLCRKRRTKTIR
PPHMTGPRCEEHVFSQQQPGHIAS----ILIPLLLLLLLLLVAGVVFVWYKRRVQGAKEFQ

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

RQPIINGGINVEIGNPSYNMYEVDHDNDGGLLDPGFMIDPTKARYIGGGPSAFKLPHTA
RQPIINGGINVEIGNPSYNMYEVDHDNDGGLLDPGFMIDPTKARYIGGGPSAFKLPHTA
HQRMTNGAMNVEIGNPTYKMYEGGEPDDVGGLLDADFALDPDK-----P-----

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

PPIYLNSDLKGPLTAGPTNYSNPVYAKLYMDGQNCNRSLSVDERKELLPKKIEIGIRET
PPIYLNSDLKGPLTAGPTNYSNPVYAKLYMDGQNCNRSLSVDERKELLPKKIEIGIRET
-----TNFTNPVYATLYMGHGHSRLASTDEKRELLGRGPEDEIGDP-----

SEQ ID NO: 15
SEQ ID NO: 33
gi7861733
R47861

--
VA
VA
LA

FIG. 5P

SEQ ID NO: 13
SEQ ID NO: 29
A47799_aal
SEQ ID NO: 31
gi3978171

HRIWVH-----
HRIWVHNCHIGDAFSEEEANRRFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRFERYPGQTSNQII
HRIWVHNCHIGDAFSEEEANRRFERYPGQTSNQIV

FIG. 6D